



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/726,652 | 12/04/2003 | Takatsugu Takamura | 2003_1757A | 6167 |

513 7590 10/28/2004
WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER
ZEMEL, IRINA SOPHIA

| | |
|------------------|--------------|
| ART UNIT 1711 | PAPER NUMBER |
|------------------|--------------|

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/726,652

Applicant(s)

TAKAMURA ET AL.

Examiner

Irina S. Zemel

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 7 is objected to because of the following informalities: claim 7 contains a period in the middle of the claims on line 3 of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,844,068 to Otera et al., (hereinafter "Otera").

Otera discloses a process for obtaining biodegradable compositions by subjecting the lactic acid to condensation to polymerization by dehydration under high temperature and reduced pressure in the presence of a metal catalyst. The reaction results in obtaining polylactic acid of molecular weight of 15,000 (a main component of the biodegradable plastic). See illustrative example 1. Therefore, the invention as claimed in claim 1 is fully anticipated by the disclosure of Otera.

Claim 1, 3, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,444,008 to Ichikawa et al., (hereinafter "Ichikawa").

Ichikawa discloses a process for obtaining biodegradable compositions by subjecting the lactic acid to condensation to polymerization by dehydration under high temperature and reduced pressure in the presence of a metal catalyst. The reaction results in obtaining polylactic acid of molecular weight of 30,000 (a main component of the biodegradable plastic). See synthetic example 2. The reaction involves removing water produced in the reaction. The reference discloses that the reaction catalyst may be selected from various catalysts, expressly listing both stannous chloride and zinc chloride in column 4, lines 55-56, thus anticipating limitations of claim 3. Both the temperature of condensation reaction disclosed as 100-200 C (column 6, lines 19-20), and the pressure disclosed in examples overlap within the ranges claimed in claim 5

Therefore, the invention as claimed in claims 1, 3, and 5 is fully anticipated by the disclosure of Ichikawa.

Ichikawa discloses several variations of an airtight apparatus comprising a container (3 or 6) for reaction mixtures, a heating device to heat the airtight container or jacket (4), and a mixing device to mix the reactants in the airtight container (1,2, 5 or 7). See figures 1-5. Although a pressure reducing unit to reduce the pressure of the

inside of the airtight container is not shown on the figures, all of the illustrative examples expressly disclose that the reaction in the containers is conducted under the reduced pressure. Thus, the disclosed apparatuses inherently comprise a pressure reducing unit to reduce the pressure of the inside of the airtight container.

Applicants should note that claim 6 is directed to a apparatus and further contains a preamble limitation of intended use of the apparatus for production of a

biodegradable plastic. Further, the first element, i.e., an airtight container, also contains an intended use limitation, i.e., "to put is a lactic acid". These limitations are given weight only to the extent that the apparatus and the container disclosed in the reference are capable of being used for the recited use. The disclosed apparatus is inherently capable for the claimed use because it is a heated reaction container that is suitable for polymeric synthesis under reduced pressure. Therefore, the preamble limitation is anticipated by the reference. The burden is shifted to the applicant to provide convincing factual evidence to the contrary.

Applicants should also note, that the claimed apparatus reads on a very well known bench laboratory equipment such as a round bottom flask that is heated with any heating devise (boiling plate or heating jacket), with a magnetic (or ant other) stirrer and which is attached to a vacuum pump.

Claims 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,108,711 to Chszaniecki (hereinafter "to Chszaniecki").

As discussed above, the intended use limitations are only given weight to the extent that the disclosed apparatus is capable of being used for the claimed production of a biodegradable plastic (irregardless of whether in may be mot the best or most convenient apparatus).

Chszaniecki discloses an airtight container (5) for input of material, a pressure reducing unit (18) to reduce the pressure of the inside of the airtight container; a heating device (6) to heat the airtight container; and a mixing devises(4). The container further comprises a discharge cylinder having an outlet (11) with a screw shaft (7) coaxial with

the discharge cylinder. The invention as claimed, therefore, is fully anticipated by the reference.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa in combination with US Patent 4,482,701 to Yamamori et al., (hereinafter "Yamamori").

The disclosure of the Ichikawa is discussed above. Ichikawa does not teach determining the end point of reaction by measuring the released amount of the water. However, monitoring the reaction progress and determining the end point of a polycondensation reaction that produces water or other low molecular weight compounds by measuring the amount of produced low molecular weight compound is well known in the art as one of the methods of monitoring the reaction progress, as disclosed, for example, in Yamamori (column 5, lines 19-40.) Therefore, determining the end point of the reaction by measuring the released amount of the water vapor concurrently with the release thereof as claimed in claim 2 of the instant application would have been obvious for an ordinary artisan at the time of the invention with reasonable expectation of adequate results because the claimed method of end point

determination is a well known method and is routinely used in polycondensation reactions.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa.

As discussed above, the reference discloses that the reaction catalyst may be selected from various catalysts, expressly listing both stannous chloride and zinc chloride in column 4, lines 55-56. The amounts of catalysts disclosed in the reference is from 0.0001 to 10 % by weight of the reactants (lactic acid), and those amounts more specifically exemplified in synthetic example 2 as about 0.3%. While the reference does not explicitly disclose combination of both zinc chloride and stannous chloride in the claimed amounts as the reaction catalyst, use of a mixture of two catalysts when each one is explicitly listed as suitable catalyst for the same reactions would have been obvious as functional equivalent of each catalyst with reasonable expectation of adequate results absent showing of unexpected results that can be clearly attributed to use of mixed catalyst. As for the amounts of catalyst, any amount that is within the broadly disclosed amounts or amounts specifically exemplified in examples (which are within the claimed range) would have been obvious with reasonable expectation of adequate results. Therefore, the invention as claimed in claim 4 would have been obvious for an ordinary artisan absent showing of unexpected results.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

Art Unit: 1711

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ISZ



James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700